

## EFFECTS OF THE WEATHER ON HUMAN HEALTH.

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There are certain persons whose physical feelings vary with the weather, and in certain diseases the weather plays an important part in recovery or decline. Dr. A. Campani, of Milan, classifies these into three groups: The first includes headache, sensations of heat, irritability, suppression of secretions, and hemorrhage of the lungs; the second includes intestinal catarrhal disturbances, sleeplessness, and loss of appetite; the third comprises rheumatic pains, pains in old scars, etc.

In the *Gazzetta degli Ospedali e delle Cliniche* (Milan) he analyzes 24,528 cases, exclusive of contagious diseases, and shows that the morbidity is least in the windy periods, especially in winter, while the highest morbidity accompanies periods of cloudy skies. As a general rule, he says, the best conditions for health seem to be during or immediately after the great atmospheric convulsions and the fair weather that follows them. The morbidity is highest during the periods of stagnation preceding storms, with a constant temperature, generally rather above the mean, the sky cloudy, and only weak atmospheric currents. The greater the fluctuations in the temperature of the 24 hours the less the morbidity, especially when the humidity is high. The northwest winds in winter and the southwest in summer seemed to be the most favorable for health in general. The influence of the weather on the development of plants and crops is so evident that he is convinced that physicians may well study the subject in the interests of patients.

## SUNSHINE AND HEALTH IN ENGLAND.

In the October, 1919, number of the *Quarterly Journal of the Royal Meteorological Society* (pp. 309-310) Mr. W. H. Dines discusses a statistical study of the relation between the death rate, temperatures, and sunshine in England.

Between death rate and temperature, he finds, as one would expect, a large negative correlation coefficient in winter, and a large positive coefficient in summer. There seems to be no significant relation between the duration of sunshine and the death rate. He concludes his note with the statement that "England, notorious for its absence of sun, is one of the most healthy climates in the world, while very sunny climates, like Egypt and South Africa, have a distinctly high death rate."—C. L. M.

## MUNICIPAL WEATHER SERVICE OF PARIS.

In a letter to the Chief of the United States Weather Bureau dated at Paris, July 22, 1920, Louis Besson, Chief of the Physical and Meteorological Service connected with the Division of Hygiene of the Préfecture de la Seine, states that his service has as its principal object the application of meteorology to public hygiene:

"\* \* \* It also furnishes all useful information on meteorological phenomena which concern the Department of the Seine; and in addition contributes, within the limits of its means, to the progress of meteorology in general.

"Our pluviometric net is now reorganized. In a circle of about 17 kilometers radius we have 60 stations supplied with rain gages of the same type. It is possible to make detailed charts of rainfall.

"For temperature, the net is less complete and less homogeneous. We are gradually putting into service a number of small English shelters containing maximum and minimum thermometers which will be less affected by influences of location than those in our French shelters. The object is to study the important question of the influence of the city of Paris upon the temperature as related to wind direction—an influence which varies from point to point and which it will be useful to determine exactly."—E. W. W.

## IRREGULAR ATMOSPHERIC REFRACTION AT HIGH ALTITUDES.

By ERIC R. MILLER, Meteorologist.

[U. S. Weather Bureau Office, Madison, Wis., Sept. 17, 1920.]

## SYNOPSIS.

Irregular atmospheric refraction is assigned as the cause of distortion and extinction of the image of the pilot balloon in the observing telescope after the balloon passed through a surface of velocity-discontinuity at altitudes of seven to ten thousand meters.

In the pilot balloon work at Madison, Wis., the author has been struck by the suddenness of disappearance of the balloon that often occurs with a perfectly clear sky. The observer's usual remark in these cases, "It was perfectly plain a moment ago, but I can't see it now," indicates that the fading out occurs in much less than the minute-interval between the reading of the theodolite circles, and probably in a few seconds.

During the present summer there have been an unusual number of flights in which the balloon ascended nearly vertically. Under this condition it has been noticed that the extinction occurred after a sudden change in the speed of the balloon. In some flights the extinction has been only partial, so that the balloon has been followed long enough to ascertain that the fading out was not due to the leaking of gas.

On several occasions, much less often than the extinction, the balloon has been observed to become double in the field of the telescope, so that the observer has been puzzled to decide which balloon to point on.

On August 25, 1920, Assistant Observer Wildeman, who was pointing the telescope, remarked a curious elongation of the balloon. The author, who was recording the readings of the theodolite circles, looked into the telescope and saw the balloon sausage shaped, and sidling across the field irregularly, like the helpless wriggling of the larva of an insect.

The exact circumstances have been noted in four of these instances, and the numerical data are given in Table 1, the graphs of the velocity and direction with reference to altitude appear in figure 1, and the distribution of pressure over the country at the times of these flights in figures 2, 3, 4, and 5.

TABLE 1.

Date.	Time (90th meridian).	Altitude.	Azimuth from south.	Altitude above horizon.	Phenomenon.
1920.		Meters.	°	°	
Aug. 14.....	8:06 a. m.....	7,998	139	41	Became faint.
Aug. 24.....	8:14 a. m.....	9,216	191	38	Do.
Aug. 25.....	7:59 a. m.....	7,560	199	44	Distorted, sausage shape.
Sept. 2.....	8:25 a. m.....	10,450	105	25	Lost 75 per cent brightness in a few seconds.